Simultaneous discovery of bifrontal meningiomas and a glioblastoma multiforme

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DESCRIPTION

A 63-year-old woman presented to her general practitioner with progressive cognitive impairment and chronic headache. MRI of her brain demonstrated bilateral extra-axial enhancing frontal lobe masses of similar morphology and enhancement pattern (white arrows, figure 1) causing midline shift to the left and hydrocephalus. There was mild transependymal flow of cerebrospinal fluid from the atrium of the right lateral ventricle (arrow, figure 2). Further MRI showed a dilated right middle meningeal artery supplying the larger of these two bifrontal masses (arrow, figure 3). A third intra-axial rim-enhancing left parietal mass (black arrow, figure 1) was also identified.

The two frontal lesions were surgically resected and approximately 1 week later, the left parietal mass was biopsied. Pathological evaluation diagnosed the bifrontal masses as meningiomas and the left parietal mass a glioblastoma multiforme (GBM). Following biopsy diagnosis, she underwent surgical resection and radiation of her GBM.

Meningiomas arise from arachnoid meningothelial cells and are typically benign WHO grade I neoplasms with a metastatic rate of approximately 0.1–0.2%.1,2 There has been little research focusing on the genetic basis of meningioma development, with the most significant finding of the neurofibromatosis-2 gene mutation on chromosome 22q12 being linked to approximately half of all meningiomas.2 They are slow-growing lesions, more common in women, and have an approximate 1% prevalence in autopsy series.1

GBMs are the most common primary brain tumours and are highly malignant WHO grade IV neoplasms of astrocytic origin with a poor prognosis.2 They may be primary, arise de novo or may...
arise secondary to degeneration by a lower grade astrocytoma. Genetic mutations are most commonly identified in three major cellular pathways in GBMs: the receptor tyrosine kinase/phosphatase and tensin homologue/phosphatidylinositol 3-kinase cell proliferation pathway; the p53 tumour suppression pathway and the retinoblastoma 1 tumour suppression pathway.² There is a slight male predominance and death usually occurs between 9 and 12 months.²

A literature search found six published reports of synchronous intracranial meningiomas and GBMs. This patient died of her GBM within 2 years of tumour resection.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

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Learning points
► Meningiomas are typically benign, WHO grade I neoplasms of arachnoid epithelial origin that are often discovered incidentally and may be intracranial or intraspinal.
► Glioblastoma multiforme (GBM) is a highly malignant, WHO grade IV neoplasm of astrocytic origin with a 5-year survival of <5%.
► Various tumour suppressor and cell proliferation gene mutations have been associated with meningiomas and GBMs, which has been a major focus of management/preventative research.